REMARKS

Claims 23-33 and 42-44 were pending and stand rejected. Claims 23 and 42-43 have been amended. New claims 45-47 have been added. Claims 23-33 and 42-47 are pending upon entry of this amendment.

Claims 23-26, 28-30, 32-33, and 42-44 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Oberg in view of Hershler. Applicant respectfully traverses.

As amended, claim 23 recites:

A method for quantifying asymmetry of joint angles of two limbs during a movement, comprising:

determining a first set of data that comprises angles of a joint of a first limb as the first limb performs the movement;

determining a second set of data that comprises angles of a joint of a second limb as the second limb performs a similar movement, wherein the two limbs comprise the first limb and the second limb;

synchronizing the first set of data and the second set of data;

generating a cyclogram based on the synchronized data; and

determining a value of a characteristic of the generated cyclogram, wherein the value quantifies asymmetry of joint angles of the first limb and the second limb.

Claim 23 is directed to a method for quantifying asymmetry of joint angles of two limbs during a movement. As described in the pending application, a first set of data is determined that comprises angles of a joint of a first limb as the first limb performs the movement (¶28). A second set of data is determined that comprises angles of a joint of a second limb as the second limb performs a similar movement, wherein the two limbs comprise the first limb and the second limb (¶28). The first set of data and the second set of data are synchronized (¶35). A cyclogram is generated based on the synchronized data (¶36). A value of a characteristic of the generated cyclogram is determined, wherein the value quantifies asymmetry of joint angles of the first limb and the second limb (¶¶37-38).

Because the legs move approximately out-of-phase during normal gait, the angle of a joint in one leg at a point in time cannot be directly compared to the angle of the corresponding joint in the other leg at the same point in time (¶35). In order to help compare these angles, the experimental angle data is synchronized (¶35). Synchronization is based on an identifiable gait event, such as a heel touchdown (¶35). The angle data for the first leg is realigned with the angle data for the second leg so that the angle of the left knee when the left heel touches down corresponds to the angle of the right knee when the right heel touches down (¶35).

In the pending application, FIGS. 3d and 3e each show a bilateral cyclogram based on the data in FIG. 3a. However, the cyclograms look different. This is because FIG. 3e is based on data that has been synchronized. FIG. 3d is based on data as it was received during the experiment, which means that the first set of data (the first leg) is aligned with the second set of data (the second leg) based on corresponding instants of time. Synchronizing the first set of data and the second set of data changes their alignment so that they are aligned based on an identifiable gait event rather than based on time.

Oberg discusses a symmetry diagram that plots left knee angle versus right knee angle (abstract). This diagram, called a "knee-knee angle diagram," provides a way to evaluate the gait symmetry between a person's left side and right side (FIG. 5; page 45, bottom of column 1). If the person's gait is symmetric, the curve of the knee-knee angle diagram will be symmetric about a line with slope 1 (page 45, bottom of column 1).

Oberg does not disclose, teach, or suggest the claimed elements "synchronizing the first set of data and the second set of data" and "generating a cyclogram based on the synchronized data." In Oberg, the knee-knee angle diagram is based on data as it was received during the experiment, which means that the first set of data (the first leg) is aligned with the second set of

data (the second leg) based on corresponding instants of time. That is why Oberg's FIG. 5 is similar to Applicant's FIG. 3d. Oberg does not disclose synchronizing the data from the first leg with the data from the second leg, nor does Oberg disclose a cyclogram that plots this synchronized data. Thus, Oberg does not disclose, teach, or suggest the claimed elements "synchronizing the first set of data and the second set of data" and "generating a cyclogram based on the synchronized data."

Hershler does not remedy this deficiency. All of the angle-angle diagrams in Hershler plot joint angles against each other for corresponding instants of time (introduction on page 109; single loop advantages on page 110). Thus, Hershler does not disclose, teach, or suggest the claimed elements "synchronizing the first set of data and the second set of data" and "generating a cyclogram based on the synchronized data."

Therefore, claim 23 is patentable over Oberg and Hershler, alone and in combination. Independent claims 42-43 recite similar language and are also patentable over Oberg and Hershler, alone and in combination, for at least the foregoing reasons.

Claim 27 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Oberg in view of Hershler further in view of Kolich. Claim 31 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Oberg in view of Hershler further in view of Goswami. Applicant respectfully traverses.

The claims not specifically mentioned above depend from their respective base claims, which were shown to be patentable over Oberg and Hershler, alone and in combination. In addition, these claims recite other features not included in their respective base claims. Thus, these claims are patentable for at least the reasons discussed above, as well as for the elements that they individually recite.

Applicant respectfully submits that the pending claims are now allowable over the cited art of record and requests that the Examiner allow this case. The Examiner is invited to contact the undersigned in order to advance the prosecution of this application.

Respectfully submitted,
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